

CLAIMS

1. (Canceled)

2. (Canceled)

3. (Canceled)

4. (Canceled)

5. A method for measuring vibration frequency of a multi-cantilever in which a plurality of cantilevers being implanted radially at an island-shaped base and having different natural frequencies are illuminated with a common laser excitation spot so as to simultaneously excite natural vibrations of the plurality of cantilevers by constant light excitation in order to measure the vibrations.

6. A method for measuring vibration frequency of a multi-cantilever in which a plurality of cantilevers being implanted towards an inner side of a spiral base and having different natural frequencies are illuminated with a common laser excitation spot so as to simultaneously excite natural vibrations of the plurality of cantilevers by constant light excitation in order to measure the vibrations.

7. A device for measuring vibration frequency of a multi-cantilever comprising:

(a) a plurality of cantilevers being implanted radially at an island-shaped base and having different natural frequencies;

(b) means for simultaneously exciting natural vibrations of the cantilevers by constant light excitation; and

(c) a laser Doppler meter for measuring the vibrations.

8. A device for measuring vibration frequency of a multi-cantilever comprising:

(a) a plurality of cantilevers being implanted radially at an island-shaped base and having different natural frequencies;

(b) means for simultaneously exciting natural vibrations of the cantilevers by constant light excitation; and

(c) a homodyne interferometer for measuring the vibrations.

9. A device for measuring vibration frequency of a multi-cantilever comprising:

(a) a plurality of cantilevers being implanted towards an inner side of a spiral base and having different natural

frequencies;

(b) means for simultaneously exciting natural vibrations of the cantilevers by constant light excitation; and

(c) a laser Doppler meter for measuring the vibrations.

10. A device for measuring vibration frequency of a multi-cantilever comprising:

(a) a plurality of cantilevers being implanted towards an inner side of a spiral base and having different natural frequencies;

(b) means for simultaneously exciting natural vibrations of the cantilevers by constant light excitation; and

(c) a homodyne interferometer for measuring the vibrations.

11. (Canceled)

12. The device for measuring vibration frequency of a multi-cantilever according to any one of Claims 7, 8, 9, and 10, wherein the cantilevers are disposed radially in a cluster so that the cantilevers are capable of being irradiated with a common excitation spot.

13. A scanning probe microscope using the device for measuring vibration frequency of a multi-cantilever according to any one of Claims 7, 8, 9, and 10 for self-exciting the natural frequencies of the cantilevers in order to detect an interaction between a specimen and a probe at an end of each cantilever as a change in a self-excitation vibration frequency, a self-excitation vibration amplitude, or a self-excitation vibration phase.

14. A mass/material detector using the device for measuring vibration frequency of a multi-cantilever according to any one of Claims 7, 8, 9, and 10 for self-exciting the natural frequencies of the cantilevers in order to detect a change in a mass adhered to a probe at an end of each cantilever as a change in a self-excitation vibration frequency, a self-excitation vibration amplitude, or a self-excitation vibration phase.